

Appln. No. 10/722,943
Amendment dated March 17, 2005
Reply to Office Action of January 14, 2005

Amendments to the Claims:

Please cancel claim 1, amend claims 2-4 and 11 as follows.
The following listing of claims will replace all prior versions,
and listings, of claims in the application.

Listing of Claims:

Claim 1 (Cancelled).

Claim 2 (Currently Amended). An automotive passenger restraint and protection apparatus for an automotive vehicle, having a seatbelt, for restraining an occupant of the automotive vehicle by the seatbelt to protect the occupant, comprising:

- 5 a motor for retracting and protracting the seatbelt;
- seatbelt attaching state detecting means for detecting whether the seatbelt is in a state attached to the occupant or in a state disconnected from the occupant;
- danger degree detecting means for detecting a significant
- 10 degree of danger of collision of the automotive vehicle; and

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control means for controlling said motor so as to retract the seatbelt to a limit thereof and then protract the seatbelt to thereby give a predetermined amount of looseness to the seatbelt,

wherein said control means controls said motor so as to give

15 a first predetermined amount of looseness to the seatbelt when the significant degree of danger is not detected by said danger degree detecting means while the seatbelt is detected to be in said state attached to the occupant, and controls said motor so as to give a second predetermined amount of looseness to the

20 seatbelt which is smaller than said first predetermined amount of looseness when the significant degree of danger is detected by said danger degree detecting means while the seatbelt is detected to be in said state attached to the occupant, and

wherein said danger degree detecting means comprises at

25 least one of vehicle speed detecting means for detecting traveling speed of the automotive vehicle, braking detecting means for detecting stepping-on of a brake pedal of the automotive vehicle, steering angle change rate detecting means for detecting a rate of change in a steering angle of the

30 automotive vehicle, ambient illuminance detecting means for detecting ambient illuminance of the automotive vehicle, and

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raindrop detecting means for detecting raindrops on the automotive vehicle.

Claim 3 (Currently Amended). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger degree detecting means comprises at least one of vehicle speed detecting means for detecting traveling speed of the automotive vehicle, braking detecting means for detecting stepping-on of a brake pedal of the automotive vehicle, steering angle change rate detecting means for detecting a rate of change in a steering angle of the automotive vehicle, ambient illuminance detecting means for detecting ambient illuminance of the automotive vehicle, and raindrop detecting means for detecting raindrops on the automotive vehicle; said danger degree detecting means detecting detects the significant degree of danger if said vehicle speed detecting means detects that the traveling speed of the automotive vehicle is higher than a predetermined value and at the same time at least one of conditions is satisfied that the stepping-on of the brake pedal is detected by said braking detecting means, the steering angle change rate detecting means detects that the rate of change of the steering angle exceeds a predetermined value, the ambient

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20 illuminance detecting means detects that the ambient illuminance of the automotive vehicle is below a predetermined value, and the raindrop detecting means detects the raindrops on the automotive vehicle.

Claim 4 (Currently Amended). An automotive passenger restraint and protection apparatus as claimed in claim 2, for an automotive vehicle, having a seatbelt, for restraining an occupant of the automotive vehicle by the seatbelt to protect the occupant, comprising:

a motor for retracting and protracting the seatbelt;
seatbelt attaching state detecting means for detecting whether the seatbelt is in a state attached to the occupant or in a state disconnected from the occupant;

10 danger degree detecting means for detecting a significant degree of danger of collision of the automotive vehicle; and control means for controlling said motor so as to retract the seatbelt to a limit thereof and then protract the seatbelt to thereby give a predetermined amount of looseness to the seatbelt,
15 wherein said control means controls said motor so as to give a first predetermined amount of looseness to the seatbelt when the significant degree of danger is not detected by said danger

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degree detecting means while the seatbelt is detected to be in said state attached to the occupant, and controls said motor so
20 as to give a second predetermined amount of looseness to the seatbelt which is smaller than said first predetermined amount of looseness when the significant degree of danger is detected by said danger degree detecting means while the seatbelt is detected to be in said state attached to the occupant, and
25 wherein said danger degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and braking detecting means for detecting a stepping-on force of a brake pedal of the automotive vehicle or stepping-on speed thereof, said control means controlling said
30 motor such that rotational speed of said motor in retracting the seatbelt is higher as the stepping-on force or the stepping-on speed detected by said braking detecting means is larger, when the traveling speed of the automotive vehicle detected by said vehicle speed detecting means is higher than a predetermined
35 value.

Claim 5 (Original). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and

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5 braking detecting means for detecting stepping-on of a brake pedal of the automotive vehicle, said control means controlling said motor such that rotational speed of said motor in retracting the seatbelt is higher as the traveling speed of the automotive vehicle detected by said vehicle speed detecting means is higher,
10 when the detected traveling speed is higher than a predetermined value and at the same time the stepping-on of the brake pedal is detected by said braking detecting means.

Claim 6 (Original). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and
5 steering angle change rate detecting means for detecting a rate of change in a steering angle of the automotive vehicle, said control means controlling said motor such that rotational speed of said motor in retracting the seatbelt is higher as the rate of change in the steering angle detected by said steering angle
10 change rate detecting means is larger, when the traveling speed of the automotive vehicle detected by said vehicle speed detecting means is higher than a predetermined value.

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Claim 7 (Original). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and

5 steering angle change rate detecting means for detecting a rate of change in a steering angle of the automotive vehicle, said control means controlling said motor such that rotational speed of said motor in retracting the seatbelt is higher as the traveling speed of the automotive vehicle detected by said

10 vehicle speed detecting means is higher, when the detected traveling speed is higher than a predetermined value and at the same time the rate of change in the steering angle detected by said steering angle change rate detecting means is larger than a predetermined value.

Claim 8 (Original). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and

5 ambient illuminance detecting means for detecting ambient illuminance of the automotive vehicle, said control means controlling said motor such that rotational speed of said motor in retracting the seatbelt is higher as the ambient illuminance

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detected by said ambient illuminance detecting means is smaller,
10 when the traveling speed of the automotive vehicle detected by
said vehicle speed detecting means is higher than a predetermined
value.

Claim 9 (Original). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and
5 ambient illuminance detecting means for detecting ambient illuminance of the automotive vehicle, said control means controlling said motor such that rotational speed of said motor in retracting the seatbelt is higher as the traveling speed of the automotive vehicle detected by said vehicle speed detecting means is higher, when the detected traveling speed is higher than
10 a predetermined value and at the same time the ambient illuminance detected by said ambient illuminance detecting means is smaller than a predetermined value.

Claim 10 (Original). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and

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5 raindrop detecting means for detecting raindrop on the automotive vehicle, said control means controlling said motor such that rotational speed of said motor in retracting the seatbelt is higher as the traveling speed of the automotive vehicle detected by said vehicle speed detecting means is higher, when the
10 detected traveling speed is higher than a predetermined value and at the same time the raindrops are detected by said raindrop detecting means.

Claim 11 (Currently Amended). An automotive passenger restraint and protection apparatus ~~as claimed in claim 2, for an automotive vehicle, having a seatbelt, for restraining an occupant of the automotive vehicle by the seatbelt to protect the~~
5 occupant, comprising:

a motor for retracting and protracting the seatbelt;
seatbelt attaching state detecting means for detecting whether the seatbelt is in a state attached to the occupant or in a state disconnected from the occupant;
10 danger degree detecting means for detecting a significant degree of danger of collision of the automotive vehicle; and
control means for controlling said motor so as to retract the seatbelt to a limit thereof and then protract the seatbelt to thereby give a predetermined amount of looseness to the seatbelt,

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15 wherein said control means controls said motor so as to give
a first predetermined amount of looseness to the seatbelt when
the significant degree of danger is not detected by said danger
degree detecting means while the seatbelt is detected to be in
said state attached to the occupant, and controls said motor so
20 as to give a second predetermined amount of looseness to the
seatbelt which is smaller than said first predetermined amount of
looseness when the significant degree of danger is detected by
said danger degree detecting means while the seatbelt is detected
to be in said state attached to the occupant, and
25 wherein said danger degree detecting means comprises vehicle
speed detecting means for detecting traveling speed of the
automotive vehicle, and braking detecting means for detecting a
stepping-on force of a brake pedal of the automotive vehicle or
stepping-on speed thereof, said control means controlling said
30 motor such that an amount of protraction of the seatbelt is
smaller as the stepping-on force or the stepping-on speed
detected by said braking detecting means is larger, when the
traveling speed of the automotive vehicle detected by said
vehicle speed detecting means is higher than a predetermined
35 value.

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Claim 12 (Original). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and
5 braking detecting means for detecting stepping-on of a brake pedal of the automotive vehicle, said control means controlling said motor such that an amount of protraction of the seatbelt is smaller as the traveling speed of the automotive vehicle detected by said vehicle speed detecting means is higher, when the
10 detected traveling speed is higher than a predetermined value and at the same time the stepping-on of the brake pedal is detected by said braking detecting means.

Claim 13 (Original). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and
5 steering angle change rate detecting means for detecting a rate of change in a steering angle of the automotive vehicle, said control means controlling said motor such that an amount of protraction of the seatbelt is smaller as the rate of change in the steering angle detected by said steering angle change rate
10 detecting means is larger, when the traveling speed of the

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automotive vehicle detected by said vehicle speed detecting means is higher than a predetermined value.

Claim 14 (Original). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and 5 steering angle change rate detecting means for detecting a rate of change in a steering angle of the automotive vehicle, said control means controlling said motor such that an amount of protraction of the seatbelt is smaller as the traveling speed of the automotive vehicle detected by said vehicle speed detecting 10 means is higher, when the detected traveling speed is higher than a predetermined value and at the same time the rate of change in the steering angle detected by said steering angle change rate detecting means is larger than a predetermined value.

Claim 15 (Original). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and 5 ambient illuminance detecting means for detecting ambient illuminance of the automotive vehicle, said control means

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controlling said motor such that an amount of protraction of the seatbelt is smaller as the ambient illuminance detected by the ambient illuminance detecting means is smaller, when the
10 traveling speed of the automotive vehicle detected by said vehicle speed detecting means is higher than a predetermined value.

Claim 16 (Original). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and
5 ambient illuminance detecting means for detecting ambient illuminance of the automotive vehicle, said control means controlling said motor such that an amount of protraction of the seatbelt is smaller as the traveling speed of the automotive vehicle detected by said vehicle speed detecting means is higher,
10 when the detected traveling speed is higher than a predetermined value and at the same time the ambient illuminance detected by the ambient illuminance detecting means is smaller than a predetermined value.

Claim 17 (Original). An automotive passenger restraint and protection apparatus as claimed in claim 2, wherein said danger

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degree detecting means comprises vehicle speed detecting means for detecting traveling speed of the automotive vehicle, and
5 raindrop detecting means for detecting raindrops on the automotive vehicle, said control means controlling said motor such that an amount of protraction of the seatbelt is smaller as the traveling speed of the automotive vehicle detected by said vehicle speed detecting means is higher, when the detected
10 traveling speed is higher than a predetermined value and at the same time the raindrops are detected by said raindrop detecting means.